N° 11,569 A.D. 1898

Date of Application, 23rd May, 1898--Accepted, 16th July, 1898

COMPLETE SPECIFICATION.

Improved Apparatus for the Manufacture of Flexible Gelatine Capsules for Medicinal and the like purposes.

We, Alexander Robertson, Chemical Engineer, and Kenneth Robertson, Joiner, both of Rodney Street, Canonmills, Edinburgh, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improved apparatus for the manufacture of flexible gelatine capsules and comprises a gelatine pan in which the gelatine is prepared: moulds upon which the capsules are formed and fillers whereby the capsules are filled with the ingredients that they are to contain.

But in order that our said invention may be more readily understood and easily carried into effect we will proceed to describe the same with reference to the accompanying drawings in which

Fig. 1 is a perspective view partly in section of the gelatine pan showing the capsule moulds in position therein.

Fig. 1^A is a side view of the capsule moulds removed from the gelatine pan.

Fig. 2 is a side elevation and

Fig. 3 a front elevation, partly in section, of one form of filler.

Fig. 4 is a section of a portion of a modified form of filler.

Referring to the said drawings the pan A in which the gelatine is prepared is constructed of copper and formed with a double wall or outer casing B so as to form a chamber or compartment within which hot water is freely circulated to melt the gelatine. The pan A is provided with a partition C extending from side to side but arranged so that a small space is left between it and the bottom of the pan, the said partition dividing the pan into two compartments. The gelatine is placed in the right hand compartment, and as it melts flows below the partition into the left hand compartment, the partition thus serving to strain or materially free the gelatine from impurities or scum. Any scum passing below the partition is removed to the other compartment by means of the scraper D leaving the pure gelatine for use, which scum being merely thickened gelatine is again remelted thus avoiding any undue waste of material.

The moulds E Fig. 1^A are, in accordance with our invention, made of aluminium to ensure lightness and are attached to a brass plate F which is tapped to receive the screwed ends of the stems of the moulds. The moulds are secured to the plate until the shoulders *f* bear against it when they are locked by the round or other shaped nuts *e*. f^1 is the handle by which the moulds are manipulated.

Fig. 1 shows the moulds E in position within the pan the moulds being dipped in by the hand and at once withdrawn. When the moulds are removed the space occupied by them is covered by a lid (not shewn) similar to the lid G covering the right hand compartment but having a depending flange at one end to close the opening at the outlet *a* of the pan. Whilst the moulds are being dipped both of these covers are removed.

The water is filled into the chamber, to circulate around the pan, by means of the pipe H which is closed with a screwed cap *h*, a Bunsen or other burner

[*Price 8d.*]

being situated below the chamber to keep the water hot. A small exit pipe is situated towards the top of the water chamber at the back thereof to conduct the steam or hot air out of the building or chamber in which the pan is being used.

After the gelatine has set and the capsules have been removed from the moulds they are ready to be filled, which operation is performed by means of the filler shewn in Figs. 2 and 3.

The filler consists of a cylindrical body J which, if the ingredient under treatment is of a thick nature such as cascara, may be provided or formed with a jacket J so that hot water may circulate around the cylinder to keep the cylinder warm and the ingredient fluid. The said cylinder is mounted upon a pillar K secured upon a base *k*, which pillar also supports the Bunsen or other burner serving to heat the water in the jacket. The lower extremity of the cylinder J is bored and fitted with a cock L provided with a hollow needle or filling nozzle *l* over which the tubular portion M of the capsule is slipped. The said filling nozzle *l* is made of German silver and attached to the cock L by means of the small screwed stuffing box *m* so that no leakage may occur. The cylinder J is made of gun metal and constructed to stand an air pressure of 100 lbs per square inch, the air being used for the purpose of forcing the ingredients through the nozzle into the empty gelatine capsule. To obtain this pressure we employ a plunger or piston N the rod *n* of which is situated within a hollow square-threaded screw P, a strong spiral spring P surrounding the said rod *n* keeping the plunger normally in position but allowing it to yield should the pressure become too severe. The said screw P is provided with an actuating hand wheel or disc p^1 and passes through a screwed cap Q by removing which the ingredients can be placed within the cylinder.

The jacket *j* is filled by the pipe R and steam or hot air led away by the pipe *r*.

As a modification we may, in place of providing each filler with means for forcing the ingredients into the capsules, employ a main air compresser connected by tubes to the various fillers, the filler being then constructed as shewn in Fig. 4.

With this filler the compressed air is introduced at the back or other convenient position by a pipe or tube such as S and in order to enable the cylinder or body to be filled we employ a lid or cover T hinged at *t* and secured by a hinged bolt and butterfly nut t^1 as shewn. A pipe or tube U is situated at the lower part of the water jacket and another tube at the top or upperpart thereof, both similar to those employed with the hand operated fillers, to fill and empty same with water.

The lower extremity of Fig. 4 though not shewn, is fitted in substantially the same manner as the fillers shewn in Figs. 2 and 3.

All of the said fillers may be made in various sizes and fitted with water jackets or they may be constructed without hot water jackets when the nature of the ingredient is such that it is sufficiently fluid to flow without being heated.

In accordance with our invention the operator is able with moderate pressure and a minimum movement of the cock to start and stop the flow instantly and to discharge the contents rapidly through the nozzle into the capsule.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is:—

1. In apparatus for the manufacture of flexible gelatine capsules for medicinal and the like purposes, the gelatine pan with hot water compartment, arranged and constructed in the manner as and for the purposes hereinbefore described and shewn in Fig. 1 of the accompanying drawings.

2. In apparatus for the manufacture of flexible gelatine capsules for medicinal and the like purposes, constructing the moulds, upon which the capsules are

formed, of aluminium, substantially as hereinbefore described and shewn in the accompanying drawings.

3. The general arrangement and construction of the moulds E, and their method of attachment, plate F and handle f^1 as shewn more particularly in Fig. 1^A of the drawings.

4. The general arrangement and construction of parts constituting our improved filler whereby the ingredient is forced under pressure into the gelatine capsules, substantially as hereinbefore described and shewn in Figs. 2 and 3 of the accompanying drawings.

5. The modified form of filler arranged to receive the air from a main compresser apart from the filler, constructed as hereinbefore described and shewn in Fig. 4 of the accompanying drawings.

6. Constructing the filling nozzle, over which the capsules to be filled are slipped, of German silver or like metal and attaching it to the regulating cock by a screwed stuffing box, substantially as hereinbefore described and shewn in Figs. 2 and 3 of the accompanying drawings.

Dated this 20th day of May 1898.

JOHNSONS,
Petitioners' Agents, 115, St. Vincent Street, Glasgow.

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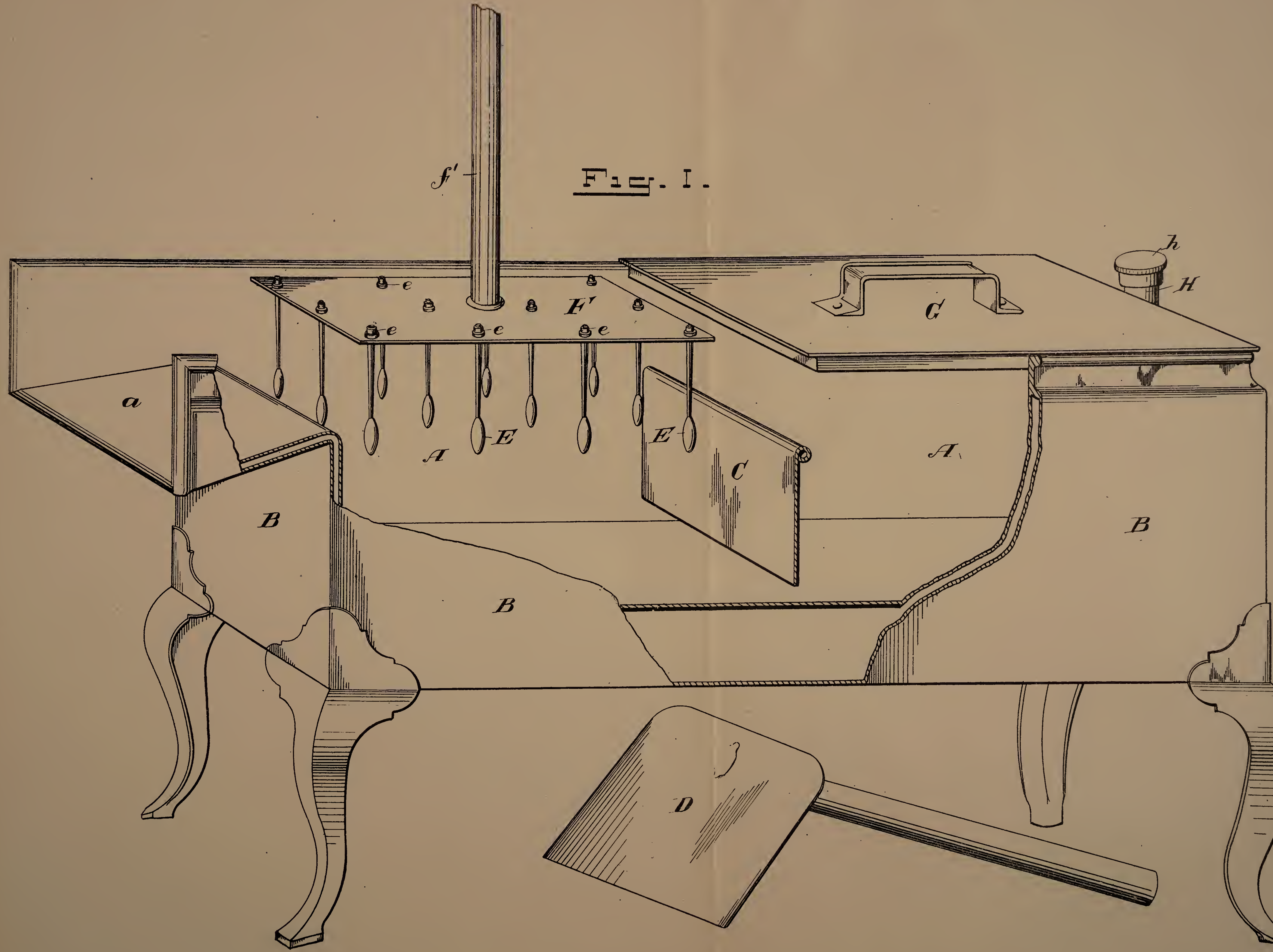
ROBERTSON & *another's* Complete Specification.

Fig. I.



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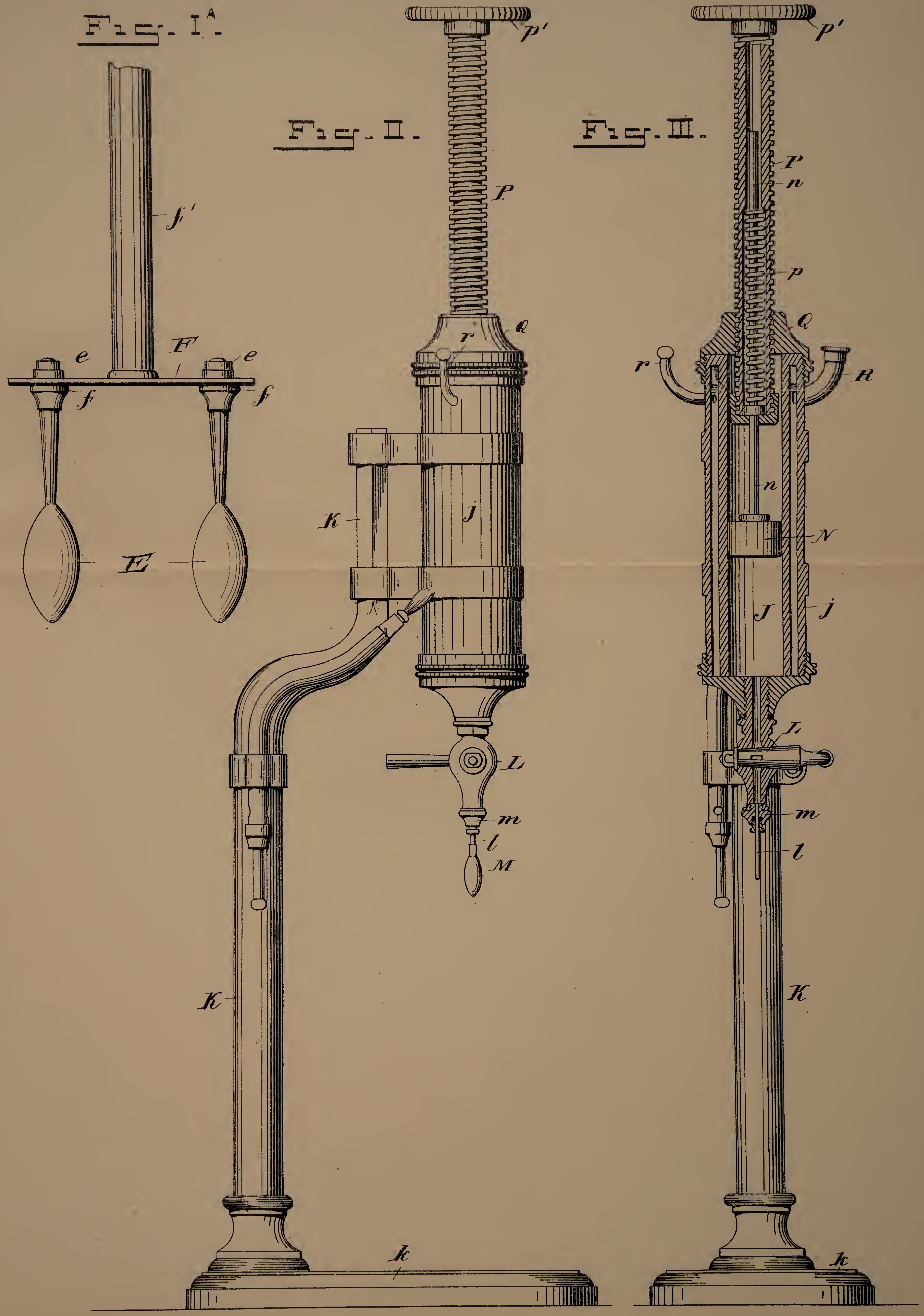
(3 SHEETS)
SHEET 2.



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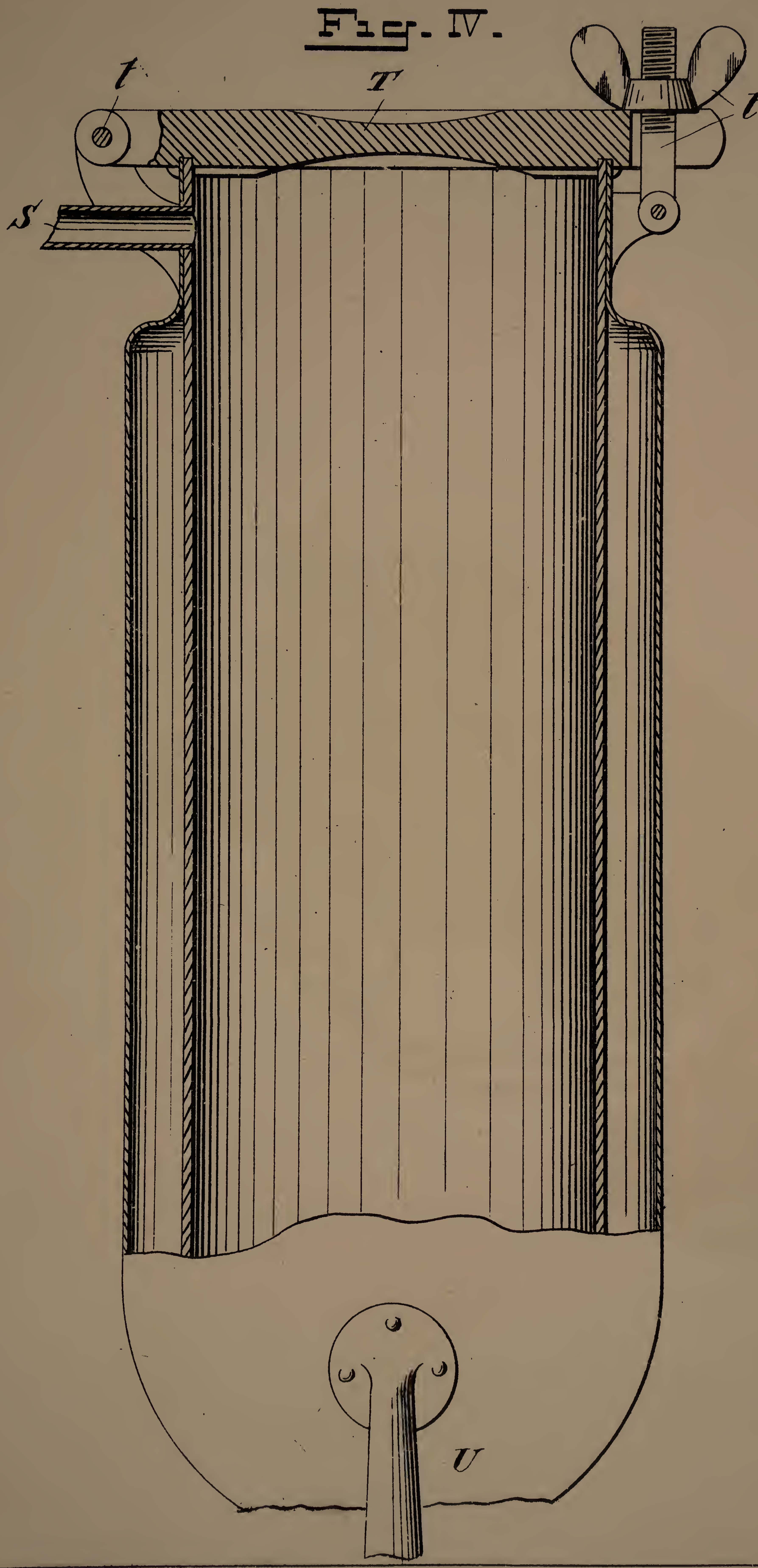
(3 SHEETS)
SHEET 3.

Fig. IV.



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